Cyber Security / Library

Roll No. ..... Total Pages : 03

BT-4/M-24 44220

INTERNET AND WEB TECHNOLOGY

PC-CS-AIDS

Time : Three Hours] [Maximum Marks : 75

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks.

Unit I

1. How to determine that a website needs a search system ? Also discuss the anatomy of search system. **15**

2. Identify the basic uses of Architectural Page Mockups in order to design efficient Information Architecture. **15**

Unit II

3. Write HTML code for a single web page design for the following : **15**
   (i) To divide web page in four sections with 25% each
   (ii) To display five different images and all five images are moving from top to bottom
   (iii) To add a video that has width of 520 pixels by 440 pixels
   (iv) To create a nested list.

(v) To create a form having three checkboxes, three radio buttons and one submit button.

4. What is CSS ? Explain all different methods, how is CSS implemented within HTML with example. 15

Unit III

5. (i) What is Prompt Box ? Write a code for its implementation.

   (ii) Write code for embedding javascript code in HTML 5. 15

6. (i) How are switch statements implemented in JavaScript ?

   (ii) Write a code for implementing ternary operator. 15

Unit IV

7. Write a single Python program to execute the following : 15

   (i) Both ways to end a loop

   (ii) Use split() function

   (iii) Multiple inheritance

   (iv) Range() and xrange() function

   (v) Python namespace.

8. Write a single program to execute the following : 15

   (i) Whether a number is whole or not

(ii) Different functions to retrieve rows from a table

(iii) What are *args ?

(iv) Difference between List and Tuples with example

(v) Apply Del() and remove() on List.

Roll No. ..... Total Pages : 03

BT-4/M-24 44221

DATABASE MANAGEMENT SYSTEM
PC-CS-AIDS-210A

Time : Three Hours] [Maximum Marks : 75

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks.

Unit I

1. (a) With the help of suitable example, differentiate between file-based information system and database management system.

   (b) What is data independence ? Discuss the same with the help of three schema architecture.

2. (a) What do you mean by entity relationship model ? Draw the various symbols used in E-R model.

   (b) Discuss the concept of generalization and aggregation with the help of an example.

Unit II

3. (a) What is relational algebra ? Explain various relational algebra operators with suitable example of each.

   (b) What do you mean by relational calculus ? Explain along with its various types.

4. (a) With the help of suitable syntax, discuss three commands each of DDL, DML, and DCL.

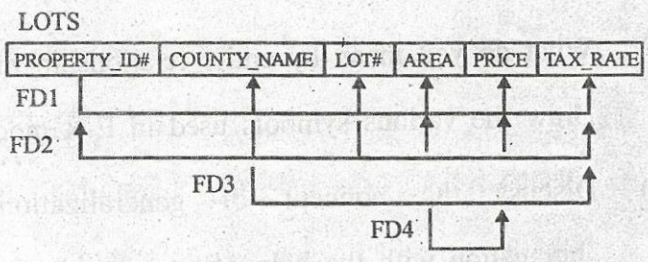
   (b) What are Views ? How a view is different from a table ? Give the syntax to create, delete and drop the view.

Unit III

5. What do you mean by functional dependencies ? Also, discuss the various anomalies while designing a database. Discuss the same with the help of suitable example.

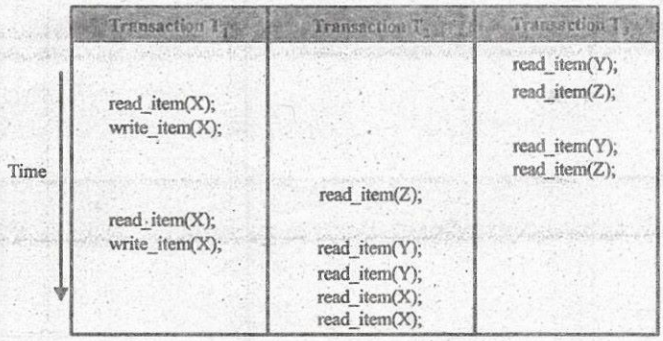
6. What is Normalization ? Why is it required ? Explain various normal forms with the help of given example.

Explain :



Unit IV

7. What is Serializability ? Discuss the same along with its various types. Also, check whether that the given schedule is conflict serializable or not :



8. (a) Discuss Basic Time Stamp Ordering concurrency control algorithm.

   (b) What is database recovery ? Explain shadow paging recovery method with the help of suitable example.

Roll No. ..... Total Pages : 04

BT-4/M-24 **44222**

OPERATING SYSTEM
PC-CS-AIDS-212A

Time : Three Hours] [Maximum Marks : 75

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks.

Unit I

1. What is an operating system ? Discuss essential properties of the following type of operating systems :
   (a) Multi-programmed operating systems.
   (b) Time sharing operating systems.
   (c) Distributed operating systems.

2. Explain the following :
   (a) System calls.
   (b) Different types of protection.
   (c) Virtual machine.

Unit II

3. Consider the following set of processes, with arrival time, length of the CPU burst time, and priority (lower number

means higher priority). Draw the Gantt chart and then calculate the average waiting time for Shortest Job First, Shortest remaining time next, and priority (preemptive case only).

Process	Arrival Time (msec)	Burst Time (msec)	Priority
P1	0	10	5
P2	0	5	2
P3	2	3	1
P4	5	20	4
P5	10	3	3

4. (a) What do you mean by communication primitives ? Explain in detail inter process communication along with its various design issues.

   (b) What do you mean by critical section problem ? Give the criteria to measure the performance of critical section problem.

Unit III

5. What is Deadlock ? Consider the following snapshot of a system :

Process	Allocation				Max				Available			
	A	B	C	D	A	B	C	D	A	B	C	D
P0	0	0	1	2	0	0	1	2	2	1	0	0
P1	2	0	0	0	2	7	5	0				
P2	0	0	3	4	6	6	5	6				
P3	2	3	5	4	4	3	5	6				
P4	0	3	3	2	0	6	5	2				

Answer the following questions using the Banker's algorithm :

(a) What is the content of the matrix Need ?

(b) Is the system in a safe state, justify ?

(c) Can a request (0,1,0,0) from process P3 be safely granted immediately ? Justify your answer.

6. (a) What do you mean by page replacement ? Explain various page replacement algorithms along with their advantages and disadvantages.

(b) Using LRU and optimal page replacement algorithm, determine the number of page faults when reference to pages occur in the following order :
1, 2, 4, 5, 2, 1, 2, 4.

Assume that the main memory can accommodate 3 pages and the main memory already has the pages 1 and 2, with page 1 having been brought earlier than page 2.

Unit IV

7. What is disk scheduling ? Suppose that a disk has 200 cylinders, numbered 0 to 199. The drive is currently serving a request at cylinder 98. The queue of pending requests, in FIFO order, is 98, 183, 37, 122, 14, 124, 65, 67. Starting from the current head position, what is the total distance (in cylinders) that the disk arm moves to satisfy all the pending requests, for each of the following disk scheduling algorithms ?

(a) FCFS.

(b) SSTF.

(c) C-SCAN.

8. Write short notes on the following :

(a) File allocation methods.

(b) General graph directory.

(c) Domain of protection.

Roll No. ..... Total Pages : 04

BT-4/M-24 44223

MATHEMATICS FOR INTELLIGENT SYSTEMS

Paper : PC-CS-CYS-202A

Time : Three Hours] [Maximum Marks : 75

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks.

Unit I

1. (a) Check whether the set of vectors are linearly dependent or independent. If linearly dependent, then find the relationship between them : (1, 2, 1), (2, 1, 4), (4, 5, 6), (1, 8, – 3). 8

   (b) Find the rank of the matrix : 7

$$\begin{pmatrix} 1 & 1 & 1 \\ 1 & -1 & 1 \\ 3 & 1 & 1 \end{pmatrix}$$

2. Find the eigen values and corresponding eigen vectors for the matrix : 15

$$\begin{bmatrix} 8 & -6 & 2 \\ -6 & 7 & -4 \\ 2 & -4 & 3 \end{bmatrix}$$

Unit II

3. Solve : 15

$$\frac{d^2y}{dx^2} - 4\frac{dy}{dx} + 4y = e^{2x}$$

4. A particle falls under gravity in a resisting medium whose resistance varies with velocity. Find the relation between distance and velocity if initially, the particle starts from rest. 15

Unit III

5. Show that the differential equation for the current i in an electrical circuit containing an inductance L and a resistance R in series and acted on by an electromotive force E sin wt satisfies the equation : 15

$$L\frac{di}{dt} + Ri = E \sin wt.$$

Find the value of the current at any time t, if initially there is no current in the circuit.

6. Expand :

$\tan\left(x+\frac{\pi}{4}\right)$ as far as the term x^4 using Taylor's series and evaluate tan 46.5° to four decimal places. 15

Unit IV

7. (a) 4 coins are tossed simultaneously. What is the probability of getting : 7

(i) 2 heads

(ii) at least 2 heads

(iii) at most 3 heads ?

(b) If a die is thrown 6 times and getting 5 or 6 is considered a success, obtain the probability of getting 0, 1, 2, 3, 4, 5, or 6 successes. 8

8. (a) It is given that 2% of the screws manufactured by a company are defective. Use Poisson Distribution to find the probability that a packet of 100 contains : 8

(i) no defective screws

(ii) one defective

(iii) two or more defectives.

[Given $e^{-2} = 0.135$]

(b) What is Monte-Carlo Simulation ? How does the Monte-Carlo Simulation method work ? Explain the four steps in the Monte-Carlo Simulation. 7

Roll No. ..... Total Pages : 03

BT-4/M-24 **44224**

OBJECT ORIENTED PROGRAMMING SYSTEM

ES-CS-CYS-204A

Time : Three Hours] [Maximum Marks : 75

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks.

Unit I

1. What is object oriented programming ? Explain various features of object oriented programming. Write a program in C++ to explain features of object oriented programming. **15**

2. Define Class and Object. Write a program to print the area and perimeter of a triangle having sides of 3, 4 and 5 units by creating a class named 'Triangle' with a function to print the area and perimeter. **15**

Unit II

3. (i) Define static data members and static member functions. **5**

(ii) Define Inheritance. Explain various types of inheritance. **10**

4. Define Constructors. Explain various types of constructors. Develop a program to justify effect of constructors and destructors of Base class in Derived class. **15**

Unit III

5. (i) Explain Operator Overloading. Develop a program for unary minus Operator Overloading. **10**

(ii) List various rules of operator overloading. **5**

6. (i) Distinguish between virtual functions and pure virtual function. Develop a program to implement the concept of virtual functions. **10**

(ii) How do you achieve Static Polymorphism in C++ ? **5**

Unit IV

7. (i) Distinguish between Class Template and Function Template. Develop a program to swap two numbers using function template. **10**

(ii) Develop a program in C++ to read and write data in binary files. **5**

8. Explain Exception Handling in C++. Illustrate mechanism of exception handling with suitable program in C++. Also explain concept of rethrowing of an exception. **15**

Roll No. ..... Total Pages : 03

BT-4/M-24 **44225**

CRYPTOGRAPHIC FUNDAMENTALS

PC-CS-CYS-212-A

Time : Three Hours] [Maximum Marks : 75

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks.

Unit I

1. (a) Explain conventional encryption Model. **5**

(b) Discuss substitution ciphers and transposition ciphers. **5**

(c) What do you understand by the term 'Steganography' ? **5**

2. (a) Discuss Shannon's theory of confusion and diffusion. **8**

(b) Write a short note on differential and linear crypt analysis of DES. **7**

Unit II

3. (a) Explain the principles of public key crypto systems. **5**

   (b) Discuss Diffie Hellman key exchange algorithm. **5**

   (c) Write a short note on Elliptic curve Cryptography. **5**

4. (a) Explain the importance of Digital Signatures. Discuss the digital signature standards (DSS). **8**

   (b) Discuss electronic mail security. **7**

Unit III

5. (a) Explain Cryptographic techniques. **5**

   (b) Write a short note on internet security protocols. **5**

   (c) Discuss Public key Infrastructure (PKI). **5**

6. (a) Explain the importance of information security. **5**

   (b) Discuss the security impact on database function. **5**

   (c) Write a short note on Multi-level relational data models. **5**

Unit IV

7. Describe the security concepts of intrusion detection systems. 15

8. (a) Discuss the vulnerability analysis in intrusion detection. 8

   (b) Write a short note on technical issues with intrusion detection system. 7

C

Roll No. ..... Total Pages : 2

46298

BT-6/M-24

MOBILE SECURITY

Paper–PC-CS-CYS-302A

Time : Three Hours] [Maximum Marks : 75

Note : Students will be required to attempt *Five* questions in all, selecting *one* question each from Unit-I to Unit–IV. All questions carry equal marks.

UNIT–I

1. (a) What are SIM card and what they do? Write the situations, when you feel that SIM card is hacked or compromised.

(b) How mobile network is different from other networks? Write about components of Mobile data network. (8+7=15)

2. Outline and explain Mobile architecture. Discuss security aspects and cryptographic techniques in brief. (15)

UNIT–II

3. (a) Write the historic evolution of Android system. Discuss in brief about android devices.

(b) What is Android ROM and Boot loaders on Android device and how to unlock it? (8+7=15)

4. (a) What is Android file system forensic? Discuss the provisions regarding data theft from Android devices.

(b) Elaborate mobile security policy and procedure for corporates. (8+7=15)

UNIT–III

5. (a) How is acquisition phase a major challenge in Windows phone analysis?

(b) How do you use Windows file system in forensic analysis? What are its common applications? (8+7=15)

6. (a) Discuss the architectural model of iOS devices. Explain the operating modes of iOS devices.

(b) What are the two type of blocks in the HFS? Discuss the different methods for data extraction/ acquisition from iOS devices? (8+7=15)

UNIT–IV

7. Elaborate the common types of mobile malware. How these malwares may infect/attack your mobile phone? Discuss defense mechanism. (15)

8. Discuss the following :

(a) Using Mobile sandbox.

(b) Mobile device asset & MM payloads.

(c) Forensic Investigation of Mobile Malware. (5+5+5=15)

Roll No. ..... Total Pages : 4

46299

BT-6/M-24

SOFT SKILL AND INTERPERSONAL COMMUNICATION

Paper–OE-CS-CYS-302

Time : Three Hours] [Maximum Marks : 75

Note : Attempt *five* questions in all. All questions carry equal marks.

1. How does maintaining objectivity contribute to the credibility of technical reports? Can you provide examples of how brevity enhances the effectiveness of technical documents? (15)

2. Why is it important to engage in active listening, and how does it contribute to effective communication? (15)

3. Form *two* suitable words from the following prefix and suffix given :

(i) a _____

(ii) ante _____

(iii) dis _____

(iv) an _____

(v) en _____.

(vi) eu _____.

(vii) un_____.

(viii) in _____.

(ix) _____ies.

(x) _____ss.

(xi) _____ware.

(xii) _____ed.

(xiii) _____ship.

(xiv) _____esque.

(xv) _____ism. (15)

4. Why is it important to provide background information in the introduction of a written piece? Can you explain the significance of a thesis statement and its placement in an introduction? Discuss citing valid examples. (15)

5. Draft a letter to a car dealership addressing issues with the performance of a newly purchased car. (15)

6. Construct sentences from the following idioms/phrases :

(i) Speak of the devil.

(ii) Bite the bullet.

(iii) A blessing in disguise.

(iv) Call it a day.

(v) Cutting corners.

(vi) Beat around the bush.

(vii) Hit the sack.

(viii) Back against the wall.

(ix) Up in arms.

(x) Sell like hot cakes.

(xi) On cloud nine.

(xii) Boil the ocean.

(xiii) A snowball effect.

(xiv) Chip off.

(xv) Fair and square. (15)

7. Write one word for the following sentences :

(i) Study of birds.

(ii) Study of flying aeroplanes.

(iii) One who is all powerful.

(iv) One who makes vain display of his knowledge.

(v) Study of hereditary, genes and variation in living organisms.

(vi) Study of religion.

(vii) Study of the influence of planets and stars on human events.

(viii) Study of science of insects.

(ix) Mapping of earth and its formation.

(x) An expert in writing by hand.

(xi) Fear or dislike of foreigners.

(xii) The killing of a whole race.

(xiii) Morbid delusion of power, importance or godliness.

(xiv) Madness with an obsession with something.

(xv) One who talks while sleeping. (15)

8. Write a letter to a hotel manager regarding an unsatisfactory experience during your recent stay. (15)

Roll No. ..... Total Pages : 2

46300

BT-6/M-24

CREATIVITY, INNOVATION AND ENTREPRENEURSHIP

Paper–OE-CS-CYS-304

Time : Three Hours] [Maximum Marks : 75

Note : Students are required to attempt *five* questions in all by selecting at least *one* question from each unit. All questions carry equal marks.

UNIT–I

1. What are the principles of creativity ? Explain the critical thinking process and barriers to creativity. What are the four C's of creativity? (15)

2. Explain the factors contributing to successful technological innovation. What are the methods of training used for creativity? (15)

UNIT–II

3. What is entrepreneur profile analysis? How is it conducted? Also explain the concept of entrepreneurial ecosystem and describe it's various components. (15)

4. What are the steps involved in a lean startup framework? Compare and contrast lean *vs* agile startup framework. (15)

UNIT–III

5. What is creative intelligence, explain its components. Draw and explain the Matrix depicting four types of creativity. (15)

6. How intrinsic and extrinsic motivation is related to creativity? Also explain various types of creative blocks and strategies to unblock it. (15)

UNIT–IV

7. What is Innovation? Explain the elements and principles of innovation. Also differentiate between incremental and radical Innovation. (15)

8. Explain the Ideation process and it's stages. Explain in detail the ideation methods with relative examples. (15)

Roll No. ..... Total Pages : 2

46303

BT-6/M-24

DIGITAL FORENSICS

Paper–ES-CS-CYS-304A

Time : Three Hours] [Maximum Marks : 75

Note : Attempt any *five* questions by selecting at least *one* question from each unit.

UNIT–I

1. (i) Discuss the history of digital forensics. (7)

(ii) Differentiate command-line and UNIX/LINUX tools. (8)

2. (i) What is the requirement of digital forensics tool? List various types of digital forensics tools. (7)

(ii) Discuss various steps involved in digital forensics investigation process. (8)

UNIT–II

3. (i) Differentiate usable and unusable file format with example. (7)

(ii) Define web attack. List various types of web attacks. How these can be avoided? (8)

4. (i) How hashing concepts help in maintaining the integrity of evidence? (7)

(ii) Differentiate live and dead system forensic with example. (8)

UNIT–III

5. (i) Discuss various functions performed by
   (a) Window registry
   (b) Pre-fetch files. (2×4=8)
   (ii) Write and explain the steps while build a window executable file. (7)

6. (i) Differentiate NTFS and UEFI file system. (8)
   (ii) Discuss various methods used for shadow copy. (7)

UNIT–IV

7. (i) Discuss the role of various components included in Email header forensic. (7)
   (ii) Discuss various legal aspects and their impact on digital forensics. (8)

8. Write short notes on :
   (i) Case study of Social network sites.
   (ii) Electronics Discovery. (2×7½=15)

Roll No. ..... Total Pages : 2

46304

BT-6/M-24

CRYPTANALYSIS

Paper : PC-CS-CYS-306A

Time : Three Hours] [Maximum Marks : 75

Note : Attempt *five* questions in all, selecting at least *one* question from each unit. All questions carry equal marks.

UNIT–1

1. (a) What do you understand by the term 'Cryptanalysis'. Explain classical cryptosystems and their Cryptanalysis. (10)

(b) Write a short note on Model of secure communication. (5)

2. Explain the following terms :

(a) Secure Socket Layer (SSL).

(b) Secure Electronic Transaction (SET).

(c) IP Security (IPSec). (15)

UNIT–II

3. Explain Euclidean Algorithm and Extended Euclidean Algorithm. (15)

4. Describe Chinese Remainder Theorem. (15)

UNIT–III

5. (a) Explain Hash Functions. (8)

   (b) Write a short note on message Authentication codes. (7)

6. (a) Explain Public Key Cryptography Standard (PKCS). (8)

   (b) Discuss the importance of Digital Certificates. (7)

UNIT–IV

7. (a) Describe Diffie Hellman Key Exchange. (8)

   (b) Write a short note on Massey Omura Cryptosystems. (7)

8. (a) Discuss the problems of key Exchange. (8)

   (b) Explain the Implementation of elliptic curve cryptosystems. (7)

Roll No. ..... Total Pages : 2

46305

BT-6/M-24

INFORMATION THEORY AND CODING

Paper–ES-CS-CYS-308A

Time : Three Hours] [Maximum Marks : 75

Note : Attempt *five* questions in all, selecting at least *one* question from each unit.

UNIT–I

1. (a) Write source coding theorem and explain its purpose. (7.5)

(b) What are the various information measures for continuous random variables. (7.5)

2. Explain Shannon-Fane code and Hempel-Ziv coding channel capacity in detail. (15)

UNIT–II

3. (a) Explain encoder and decoder for cyclic codes. (7.5)

(b) How to generate cyclic code by generating polynomial? (7.5)

4. (a) Explain the properties of Galois fields polynomial operations over Galois fields. (7.5)

(b) Explain the concept of Parity check polynomial. (7.5)

UNIT–III

5. Explain the terms :

(a) Galois field.

(b) Cyclic codes.

(c) Convolution code. (15)

6. (a) How Coding and Decoding of Linear Block code is done? Explain in detail. (7½)

(b) Explain the conversion of non-systematic form of matrices into systematic form with the help of example. (7½)

UNIT–IV

7. Explain the following :

(a) Trllis Diagram.

(b) State Diagram.

(c) Code Tree. (15)

8. Explain Viterbi Algorithm of Convolution code with the help of example. (15)

Roll No. ..... Total Pages : 2

46306

BT-6/M-24

CLOUD SECURITY AND MANAGEMENT

Paper– PC-CS-CYS-310A

Time : Three Hours] [Maximum Marks : 75

Note : Attempt any *five* questions by selecting at least *one* question from each unit.

UNIT–I

1. (i) Discus different service provided at various level of cloud computing. (7)

(ii) Differentiate grid and cluster computing with example. (8)

2. (i) Discuss on "evolution of cloud computing". (7)

(ii) Explain cloud computing architecture. (8)

UNIT–II

3. (i) Define SOA. Discuss : How it is related to Cloud computing. (7)

(ii) Define virtualization. Differentiate hardware and network virtualization. (8)

4. Write short notes on :

(i) Case study on SaaS.

(ii) Google App Engine. (2×7½=15)

UNIT–III

5. (i) What are various cloud securities design principles. (7)

   (ii) Discuss various jurisdictional issues raised in data location. (8)

6. (i) Discuss various cloud security services. (7)

   (ii) Differentiate host level and application level security. (8)

UNIT–IV

7. (i) Discuss the role of different components involved in SLA. (8)

   (ii) How the data is stored in Cloud. Discuss various steps in large scale data processing in cloud? (7)

8. Explain IAM model in detail. What are the various functions performed by IAM? (15)

Roll No. ..... Total Pages : 2

47407

BT-7/M-24

CYBER ATTACKS–OWASP FRAMEWORK

Paper : PC-CS-CYS-401A

Time : Three Hours] [Maximum Marks : 75

Note : Attempt *five* questions in all, selecting at least *one* question from each unit. All questions carry equal marks.

UNIT–I

1. (a) What is OWASP? Also discuss the architecture of OWASP. 9

(b) Write short note on cryptographic failure. 6

2. Explain Web application security and different OWASP security risks. 15

UNIT–II

3. (a) Write short note on user authentication of A07:2021. 5

(b) Elaborate A03:2021 injection and A02:2021 cryptographic failure. 10

4. Describe Function and Data access control. 15

UNIT–III

5. Explain the process of Handling Data from an untrusted source. Elaborate the processing with a suitable example. 15

6. Discuss the following in detail :
   (a) SQL Injection with example. 8
   (b) Cross Site Scripting (XSS). 7

UNIT–IV

7. (a) Elaborate the A06:2021 vulnerable and outdated components in detail. 10
   (b) Explain session hijacking process in detail. 5

8. Explain JWT security. Difference between Local file Inclusion and Remote file Inclusion. 15

Roll No. ..... Total Pages : 2

47419

BT-7/M-24

CLOUD SECURITY

Paper–PE-CS-CYS-425A

Time : Three Hours] [Maximum Marks : 75

Note : Attempt *five* questions in all, selecting at least *one* question from each unit.

UNIT–I

1. What do you mean by Amazon Web Service (AWS) security and AWS key managment service? How AWS key service protects data in case of serverless? (15)

2. What is role of AWS Web Application Firewall and types of AWS W AF? How it protects data and network?(15)

UNIT–II

3. What is SQL? injection and explain SQL injection technique based on Batch SQL statements and “”=”” ? (15)

4. What is Denial of Service (DOS) and Distributed Denial of Service (DDOS)? How they affect accessibility of web sites and what are different methods to protect from these attacks? (15)

UNIT–III

5. Explain the Cloud based information life cycle with the help of diagram. Explain all the phases of life cycle in detail. (15)

6. What is Data Protection Strategy and how an Effective Strategy is implemented in data protection? What are the laws of India for protection of Data? (15)

UNIT–IV

7. (a) What is proactive activity monitoring in cloud security and how it handles the issues in cloud security?

   (b) What is the difference between alert and event? Explain different types of alerts in details. (15)

8. What is Incident Response Management? Also explain the Key Elements of Incident Response Management. (15)

Roll No. ..... Total Pages : 3

BT–8/M-24 **48413**

BLOCK CHAIN IN CYBER SECURITY

Paper–PC–CS–CYS–402A

Time Allowed : 3 Hours] [Maximum Marks : 75

Note : Attempt **five** questions in all, selecting at least **one** question from each Unit. All questions carry equal marks.

UNIT–I

1. Explain the components of a Blockchain. Discuss the importance of Blockchain Technology in Modern Digital transactions. 15

2. (a) Elaborate hashing and the characteristics of a good hash function. How is hashing used in blockchain technology to ensure Data Integrity? 8

   (b) Describe encryption and its significance in Securing Information. Explain the differences between Symmetric and Asymmetric Encryption methods. 7

UNIT–II

3. (a) Explain the Proof of Work (PoW) Consensus Mechanism also discuss the Security Issues Associated with PoW. 7

(b) Discuss the Security Challenges related to Smart contracts and code Vulnerabilities. 8

4. (a) Elaborate the implications of centralization within blockchain systems. How does centralization pose a Security risk? 8

(b) Explain the Proof of Stake (PoS) consensus mechanism. 7

UNIT–III

5. (a) Elaborate the AAA framework (Authentication, Authorization, Accounting) in cybersecurity. Discuss how these components are implemented in blockchain systems. 8

(b) Elaborate Non-repudiation in Blockchain Technology. How does Blockchain achieve Non-repudiation. 7

6. (a) Discuss the methods for Measuring and Managing risks in Blockchain systems. What are the common risks Associated with Blockchain? 8

(b) Explain the role of Smart contracts in blockchain Technology. Discuss the security challenges associated with smart contracts. 7

UNIT–IV

7. (a) Explain the concept of function selectors in Solidity. How are function selectors used to interact with Ethereum Virtual Machine (EVM) smart contracts? 8

(b) Discuss common vulnerabilities and attacks in Ethereum smart contracts. 7

8. (a) Examine the Security hacks on Ethereum, focusing on the Poly Network hack. 7

(b) Write short note on Solidity Programming Language. Discuss the differences between Storage, Memory and Call data in Solidity. How do these differences affect the behavior and performance of smart contracts? 8

Roll No. ..... Total Pages : 2

BT–8/M-24 **48414**

ENTREPRENEURSHIP AND START-UPS'

Paper–HSS-404A

Time Allowed : 3 Hours] [Maximum Marks : 75

Note : Attempt **five** questions in all, selecting at least **one** question from each Unit. All questions carry equal marks.

UNIT–I

1. What is Entrepreneurship and which are different of Entrepreneurs? Which are different myths about Entrepreneurship? 15

2. What is Entrepreneurship Development? What is the role of Entrepreneurship in Economic Development? 15

UNIT–II

3. Which different traits/skills are required to be a successful Entrepreneur? How creative and design thinking is important? 15

4. Write some success stories of effective Entrepreneurs of India. 15

UNIT–III

5. How Business models are Crafted? Which are different types of Building and Analysing Business Models? Write with examples. 15

6. How Value prepositions are Created? Which are conventional Industry Logic and Value Innovation Logic? 15

UNIT–IV

7. Which Central and State Level Institutions support small Business Enterprises in India? 15

8. Which different Government schemes are available to support MSMEs in India? Which scheme/s suits to the business plan incepted by you? 15

Roll No. ..... Total Pages : 2

BT–8/M-24 **48419**

DATA INJECTION

Paper–OE–CS–CYS–410

Time Allowed : 3 Hours] [Maximum Marks : 75

Note : Attempt **five** questions in all, selecting at least **one** question from each Unit. All questions carry equal marks.

UNIT–I

1. (a) Explain the importance of Cyber security. 10

   (b) Discuss Cyber attack. 5

2. (a) Explain SQL injection Attacks. 10

   (b) Write a short note on web attacks forensics. 5

UNIT–II

3. (a) Describe Blind Injection Detection. 10

   (b) Explain Cross Site Scripting. 5

4. (a) Discuss Failure to Restrict URL. 5

   (b) Explain Remote Code Execution. 10

UNIT–III

5. (a) Write a short note on Attacks against Web Servers. 10

(b) Explain Patch Management Techniques. 5

6. (a) Explain the objectives of Web Applications Hacking. 10

(b) Discuss IIS Unicode Exploits. 5

UNIT–IV

7. Explain the steps to Conduct SQL injection. 15

8. (a) Explain Stack Based Buffer Overflows. 10

(b) Discuss buffer overflow Mutation Techniques. 5

Roll No. ..... Total Pages : 2

BT–8/M-24 **48420**

PENETRATION TESTING

Paper–PE–CS–CYS–414A

Time Allowed : 3 Hours] [Maximum Marks : 75

Note : Attempt **five** questions in all, selecting at least **one** question from each Unit. All questions carry equal marks.

UNIT–I

1. (a) Explain the penetration testing phases. 10

   (b) Discuss the phases of hacking. 5

2. (a) Explain the mindset of the professional Pen Tester. 10

   (b) Write a short note on Non- Disclosure Agreement Checklist. 5

UNIT–II

3. (a) Discuss Google hacking database. 10

   (b) Describe Mining Search Engine Results. 5

4. (a) Write a short note on Foot printing. 5

   (b) Discuss the role of Port Scanning. 10

UNIT–III

5. (a) Describe Steganography technologies and its countermeasures. 10

   (b) Explain MAC Flooding. 5

6. (a) Explain SQL injection prevention techniques. 10

   (b) Explain active and passive sniffing. 5

UNIT–IV

7. (a) Describe Wireless Traffic Analysis. 10

   (b) Discuss the term 'Capturing the Handshake'. 5

8. (a) Explain WiFi hacking prevention. 10

   (b) Write a short note on Master Service Agreements. 5

Roll No. ..... Total Pages : 3

BT–8/M-24 **48423**

INTRUSION DETECTION AND PREVENTION

Paper–PE–CS–CYS–422A

Time Allowed : 3 Hours] [Maximum Marks : 75

Note : Attempt **five** questions in all, selecting at least **one** question from each Unit. All questions carry equal marks.

UNIT–I

1. (a) Explain the key components of Intrusion Detection and Prevention System (IDPS). How do these components interact to provide Security? 8

   (b) Elaborate the Defense-in-Depth approach and its importance in IDPS. 7

2. (a) Discuss the dangers and defensive strategies for man-in-the-middle (MITM) attacks and DNS spoofing. 8

   (b) Describe the concept of port security and the use of Encrypted Protocols in Securing Network Communication. 7

UNIT–II

3. (a) Describe the Network Behavior Analysis (NBA) architecture. Discuss the key components and their functions in detecting and mitigating network threats. 9

   (b) What is IDS? Discuss its various types. 6

4. (a) Elaborate the evolution of Honeypots from Gen I to Gen III. 7

   (b) Discuss the deployment of Cowrie Honeypots in a Network environment also elaborate its Architecture. 8

UNIT–III

5. (a) Explain the configuration process of Snort IDS. Discuss the integration of Snort with MySQL and its implications for security monitoring. 7

   (b) Explain the direct and indirect integration approaches for combining different IDPS technologies. 8

6. (a) Discuss the integration of Firewalls, Routers, and Honeypots as complementary IDPS technologies. 8

   (b) Explain the concept of IPS (Intrusion Prevention System) using IP Traceback techniques. 7

UNIT–IV

7. (a) Discuss the features of Wireless Local Area Network (WLAN) standards. 7

(b) Describe the key components of WLAN and their roles in facilitating Wireless Communication. 8

8. (a) Elaborate various threats against WLANs and discuss the implications for Wireless IDPS. 7

(b) Discuss the challenges and strategies for managing a Wireless IDPS deployment effectively. 8